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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES



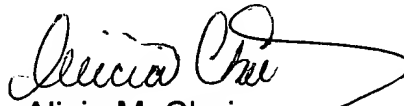
APPEAL BRIEF FOR THE APPELLANT

Ex parte Govind MALALUR

TABLE LOOKUP MECHANISM FOR ADDRESS RESOLUTION

Serial No. 09/714,273
Appeal No.: Not yet assigned
Group Art Unit: 2164

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Appeal Brief



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re the Appellant:

Govind MALALUR

Serial Number: 09/714,273

Group Art Unit: 2164

Filed: November 17, 2000

Examiner: AL HASHEMI, SANA A

For: TABLE LOOKUP MECHANISM FOR ADDRESS RESOLUTION

BRIEF ON APPEAL

March 28, 2007

I. INTRODUCTION

This is an appeal from the final rejection set forth in an Official Action dated October 20, 2006, finally rejecting claims 1-15, all of the claims pending in this application, as being anticipated by *Bechtolsheim* et al. ("*Bechtolsheim*"), U.S. Patent No. 6,829,217. A Response was timely filed on November 14, 2006. An Advisory Action was issued on December 7, 2006, indicating that the Response has been considered but does not place the application in condition for allowance. A Notice of Appeal was timely filed on January 22, 2007. A Notice of Appeal and Pre-Appeal Brief Request for Review were timely filed on January 22, 2007. A Notice of Panel Decision was mailed March 1, 2007, permitting the appeal to continue. This Appeal Brief is being timely filed within one month of the mailing of the Notice of Panel Decision. Because the rejections are in error, it is respectfully requested that the rejections be reversed.

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II. REAL PARTY IN INTEREST

The real party in interest in this application is Broadcom Corporation based on an Assignment filed on November 17, 2000 at the United States Patent and Trademark Office.

III. STATEMENT OF RELATED APPEALS AND INTERFERENCES - 37

CFR 41.37(c)(1)(ii)

There are no known related applications, patents, judicial proceedings, appeals, and/or interferences that are related to, will directly effect, be directly effected by, or have a bearing on the Board's decision in this appeal.

IV. STATUS OF CLAIMS - 37 CFR 41.37(c)(1)(iii)

Each of claims 1-15 were rejected and their respective rejections are the subject of this appeal. If some claims were rejected more than once, every rejection of every such claim is appealed. See Section VII ("Grounds of Rejection"), below, for a detailed listing of the various grounds of rejection.

V. STATUS OF AMENDMENTS

All of claims 1-15 stand as they were previously presented prior to the Office Action. No amendments have been submitted or entered since that time. Thus, claims 1-15 are pending and the respective rejections of claims 1-15 are appealed.

The most recent amendment to the claims was made in a response filed April 6, 2005.

VI. SUMMARY OF CLAIMED SUBJECT MATTER - 37 CFR 41.37(c)(1)(v)

The following is a concise explanation of the subject matter defined in each of the independent claims, as required by 37 CFR 41.37(c)(1)(v).

Claim 1, upon which claims 2-7 depend, is directed to a method of performing a table look-up in a network device. *See, for example*, page 1, lines 9-11 (paragraph [7]). The method receives a data packet through an input port of the network device. *See, for example*, page 10, lines 12-13 (paragraph [48]). The method parses said data packet into an index portion and a corresponding bucket portion. *See, for example*, page 10, lines 13-14 (paragraph [48]). The method includes indexing, directly, said index portion to said corresponding bucket portion. *See, for example*, page 9, lines 15-17 (paragraph [45]), and page 10, lines 19-20, (paragraph [49]). The method includes accessing address table information stored in an address look-up table using said bucket portion. *See, for example*, page 11, lines 8-11 (paragraph [50]).

Claim 8, upon which claims 9-14 depend, is directed to an address table look-up indexing device. *See, for example*, FIG. 1A and paragraph [35]. The device includes a receiver portion of a port of a network device that receives an incoming data packet. *See, for example*, FIGS. 4A and 4B, page 10, lines 12-13 (paragraph [48]), page 10, lines 17-18 (paragraph [49]), FIG. 5, page 12, lines 8-10 (paragraph [52]). The device includes a data parser that parses said data packet

into an index portion and a corresponding bucket portion. *See, for example*, FIGS. 4A and 4B, FIG. 5, page 12, lines 8-10 (paragraph [52]). The device includes an indexer that directly indexes said index portion to said bucket portion. *See, for example*, FIGS. 4A and 4B, FIG. 5, page 9, lines 1-9 (paragraph [43]), page 9, lines 15-17 (paragraph [45]), FIG. 5, page 12, lines 10-12 (paragraph [52]). The device also includes an address lookup device that accesses an address look-up table using said corresponding bucket portion. *See, for example*, FIGS. 4A and 4B, FIG. 5, page 12, lines 12-14 (paragraph [52]).

Claim 15 is directed to a network switch. *See, for example*, page 12, lines 15-16 (paragraph [53]). The network switch includes multiple ports used for receiving and exporting data, each of said multiple ports being connected to one another through a communications medium. *See, for example*, page 12, lines 15-17 (paragraph [53]). The network switch includes multiple Address Resolution Logic (ARL) devices, each of said multiple ARL devices being connected to one of said multiple ports, each of said multiple ports having a corresponding ARL device. *See, for example*, page 12, line 18, to page 13, line 6 (paragraphs [54]-[56]). Each of the multiple ARL devices includes a parser that parses data into an index portion and a corresponding bucket portion. *See, for example*, page 12, line 20 (paragraph [54]), page 13, line 3 (paragraph [55]), page 13, line 6 (paragraph [56]), and page 13, lines 10-12 (paragraph [57]). Each of the multiple ARL devices includes an indexer that directly indexes said index portion to a corresponding bucket portion.

See, for example, page 12, line 20 (paragraph [54]), page 13, line 3 (paragraph [55]), page 13, line 6 (paragraph [56]), and page 13, line 13 (paragraph [57]). Each of the multiple ARL devices includes a look-up device that accesses table entries in a look-up table using said bucket portion. See, for example, page 12, line 20 (paragraph [54]), page 13, line 3 (paragraph [55]), page 13, line 6 (paragraph [56]), and page 13, lines 13-16 (paragraph [57]).

VII. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL - 37 CFR
41.37(c)(1)(vi)

The grounds of rejection to be reviewed on appeal are as follows:

- The issues on appeal are whether claims 1-15 are anticipated under 35 U.S.C. §102(e) by U.S. Patent No. 6,829,217 of *Bechtolsheim* et al. ("*Bechtolsheim*"). As will be discussed below, this Appeal Brief will show that this rejection should be withdrawn, and this application passed to issue.

VIII. APPELLANT'S ARGUMENTS

Appellant respectfully submits that each of the pending claims, 1-15, recites subject matter that is neither disclosed nor suggested by the cited art. Each of the claims is being argued separately under a separate sub-heading as suggested by 37 CFR 41.37(c)(1)(vii), and thus each of the claims stands or falls alone.

Rejection of claims 1-15 under 35 U.S.C. § 102

Claims 1-15 were rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,829,217 of *Bechtolsheim* et al. ("*Bechtolsheim*"). The Office Action took the position that *Bechtolsheim* discloses all the aspects of claims 1-15. Appellant respectfully traverses this rejection and request that it be reversed.

i. Claim 1

Appellant's independent claim 1, upon which claims 2-7 depend, recites a method of performing a table look-up in a network device. The method includes receiving a data packet through an input port of the network device, parsing said data packet into an index portion and a corresponding bucket portion, indexing, directly, said index portion to said corresponding bucket portion, and accessing address table information stored in an address look-up table using said bucket portion.

Bechtolsheim generally describes a per-flow dynamic buffer management

scheme for a data communications device. Through per-flow dynamic buffer limiting, header information for each packet is mapped into an entry in a flow table, with a separate flow table provided for each output queue. Each flow table entry maintains a buffer count for the packets currently in the queue for each flow. On each packet enqueueing action, a dynamic buffer limit is computed for the flow and compared against the buffer count already used by the flow to make a mark, drop, or enqueue decision. A packet in a flow is dropped or marked if the buffer count is above the limit. Otherwise, the packet is enqueued and the buffer count incremented by the amount used by the newly-enqueued packet. The scheme operates independently of packet data rate and flow behavior, providing means for rapidly discriminating well-behaved flows from non-well-behaved flows in order to manage buffer allocation accordingly.

Specifically, FIG.3 of *Bechtolsheim* illustrates a high-level process involved in queue-based management through dynamic buffer limiting, specifically focused on the computations and transformations of the enqueueing operation. Upon receipt of a packet in a given flow, 300, the packet header is parsed 302 to determine the packet size, source address, destination address, and type of service (TOS). (Column 5, lines 25-42 of *Bechtolsheim*). Additionally, the UDP source and destination port (for an IP packet) or the MAC source and destination and protocol type (for Ethernet packets) may be extracted as required to fully identify the necessary TOS. All steps in the process of *Bechtolsheim* are implemented in a

conventional router or switch system well known in the art. (Column 5, lines 43-50 of *Bechtolsheim*). To avoid incorrect flow entry access in *Bechtolsheim*, a short generation number is stored in a transmit queue associated with the packet indicating the version of the mapping used by this packet and this version of the mapping is then queued on transmit to regenerate the same index. (Column 11, lines 55-60 of *Bechtolsheim*).

The Office Action cited to column 5, lines 4-12 of *Bechtolsheim* as describing the parsing of the packet into an index portion and a bucket portion. However, column 5, lines 4-12 of *Bechtolsheim* generally describe that a packet header is parsed to determine the packet size, source address, destination address, and type of service, and additionally, the UDP source and destination port or the MAC source and destination and protocol type may be extracted. Thus, lines 4-12 teach parsing a packet header to determine one of several parameters, *i.e.*, packet size, source address, destination address, and type of service, etc. However, nowhere in lines 4-12 does *Bechtolsheim* teach or suggest parsing a packet into an index portion and a bucket portion, as recited in independent claim 1. *Bechtolsheim* merely provides that the packet is “parsed” to determine one of several named parameters, without any teaching that the parsed portions may be an index portion and a corresponding bucket portion.

In addition, *Bechtolsheim* does not disclose any particular method, device, or switch for parsing said data packet into an index portion and a corresponding

bucket portion as recited in independent claim 1. The Office Action took the position that column 5, lines 30-37 of *Bechtolsheim* discloses this feature of independent claim 1. Appellant respectfully submits that the Office Action's interpretation of column 5, lines 30-37 of *Bechtolsheim* is erroneous because *Bechtolsheim*'s description is limited to parsing from the packet header the packet size, source address, destination address, and type of service (TOS).

For an IP packet, *Bechtolsheim* indicates that the UDP source and destination port or the MAC source and destination and protocol type (for Ethernet packets) may be extracted to identify the necessary TOS. *Bechtolsheim* does not teach or suggest that an index portion and a corresponding bucket portion may be extracted from the data packet. *Bechtolsheim* specifically refers to parsing the packet header, but there is no teaching or suggestion in column 5 or in any other portion of *Bechtolsheim* of parsing the data packet into the index portion and the bucket portion.

Further, although the Office Action at best vaguely implies that Appellant's recited index portion and corresponding bucket portion are equivalent to the parsed portions of the packet header in *Bechtolsheim*, Appellant submits that this vague association presented by the Office Action, without any specific citation to the reference or support by the knowledge available to one of ordinary skill in the art, is insufficient to properly support a rejection of independent claim 1. The index and bucket portions are expressly recited in independent claim 1 and are clearly

defined in the Specification, and therefore, an anticipatory reference under 35 USC §102 must teach or disclose the exact limitation, i.e., and index and bucket portion.

A broad assertion that a header, address, or other parameter that is parsed from a packet is equivalent to the recited index and bucket portion is not sufficient to properly support a rejection under 35 USC §102. Thus, Appellant submits that *Bechtolsheim* fails to teach or disclose each and every element recited in independent claim 1. Reversal of the rejection is respectfully requested.

Furthermore, *Bechtolsheim* does not disclose any particular method, device, or switch for indexing, directly, said index portion to said corresponding bucket portion as recited in independent claim 1. The Office Action took the position that column 6, lines 28-36 and 37-50 of *Bechtolsheim* discloses this feature of independent claim 1. Appellant respectfully submits that the Office Action's interpretation of column 6, lines 28-36 and 37-50 of *Bechtolsheim* is improper, because *Bechtolsheim*'s description is limited to outputting an index to flow table for a designated output queue for a given input flow. *Bechtolsheim* generally refers to computing a table lookup index based on a limited range of inputs (e.g., source address and destination address) as a generic hash function novel because of the choice of both input parameters and precise hash function. However, contrary to the Office Action's contentions, nothing in *Bechtolsheim* provides to index, directly, said index portion to said corresponding bucket portion as recited in independent claim 1. *Bechtolsheim* focuses on hashing the flow identifying information

contained in the packet header to reduce huge range of packet header values into a single compact field. *Bechtolsheim* is devoid of any teaching or suggestion of the indexing, directly, of said index portion to said corresponding bucket portion as recited in independent claim 1.

According to the USPTO's Advisory Action issued December 7, 2006, the Examiner apparently took the position that the Specification does not offer support for the indexing recitations of independent claim 1. Appellants respectfully point out that the Specification does offer support for the claimed features. Paragraph [0043] of the instant Specification recites "FIG. 2B is an illustration of an index segment I(1) linearly indexed to a bucket segment N(1), an index segment I(2) linearly indexed to a bucket segment N(2), an index segment I(3) linearly indexed to a bucket segment N(3) . . . Each index segment I selects a bucket segment N and the combination of index segment I and bucket segment N selects an entry in the table." The process of indexing of parsed portions is also further discussed in later sections of the Specification (e.g., paragraphs [0044] through [0047]). Thus, contrary to the contentions made in the Advisory Action, the Specification does provide support for the indexing recitations.

Even if Appellant were to assume that the flow identifying information of *Bechtolsheim* corresponds to one of Appellant's index portion or bucket portions, the description of column 6, lines 28-36 and lines 37-50, *Bechtolsheim* does not anticipate Appellant's recited limitation of directly indexing an index portion into a

bucket portion that was parsed from the same packet, as the flow information is 1) not taught as being parsed from the packet, and 2) a first parsed portion is not in any way taught as being directly indexed into a corresponding second portion of the packet that was also parsed from the packet. Thus, Appellant submits that *Bechtolsheim* fails to teach or disclose each and every element recited in independent claim 1. Reversal of the rejection is respectfully requested.

Furthermore, *Bechtolsheim* does not disclose any particular method, device, or switch for accessing address table information stored in an address look-up table using said bucket portion as recited in independent claim 1. The Office Action took the position that column 11, lines 55-60 of *Bechtolsheim* discloses this feature of independent claim 1. Appellant respectfully submits that the Office Action's interpretation of column 11, lines 55-60 of *Bechtolsheim* is improper, because *Bechtolsheim*'s description is limited to avoiding incorrect flow entry access by storing a short generation number in a transmit queue associated with the packet indicating a version of the mapping used by this packet and this version of the mapping is then queued on transmit to regenerate the same index.

Bechtolsheim does not teach or suggest that the same index is regenerated using a bucket portion. Instead, *Bechtolsheim* simply describes storing a generation number indicative of a version of mapping and using this version to regenerate the same index.

In view of the foregoing, *Bechtolsheim* fails to teach or suggest all of the

recitations of independent claim 1.

Bechtolsheim is entirely silent as to teaching or suggesting the parsing, the indexing, and the accessing of the address table information as recited in independent claim 1. As such, Appellants submit that *Bechtolsheim* fails to teach or disclose each and every element recited in independent claim 1.

Additionally, in the Response to Argument section, the Office Action notes that *Bechtolsheim* teaches “the use of UDP that provides a direct way to send and receive a datagram,” and as such, Appellant’s limitation of directly indexing an index portion into a bucket portion is taught by *Bechtolsheim*. Appellant submits that this constitutes no more than a broad unsupported conclusion, as the Office Action has not cited to any particular section of the reference, or even to knowledge available to one of ordinary skill in the art, as teaching proffered limitation. “Anticipation requires the presence in a single prior art reference the disclosure of each and every element of the claimed invention, arranged as in the claim. *Lindemann Maschinenfabrik GMBH v. American Hoise and Derrick Co.*, 221 USPQ 481, 485 (Fed. Cir 1984). The Patent Office has the burden of making out a prima facie case, which requires it to produce the factual basis for its rejection in an application under §102. *In re Warner*, 154 USPQ 173, 177 (CCPA 1967). In view of the above, Appellant respectfully submits that a proper rejection under 35 USC §102 has not been established, and as such, reconsideration and withdrawal of the rejection of independent claim 1 in view of *Bechtolsheim* is respectfully

requested.

Accordingly, in view of the foregoing, it is respectfully requested that the rejections to the claims be withdrawn and the independent claim 1 be allowed.

ii. Claim 2

Claim 2 depends from and further limits independent claim 1. Accordingly, the arguments from Section VIII(i), above, apply with even greater force to claim 2.

Furthermore, claim 2 recites, “said step of indexing said index portion to said bucket portion is the step of linearly indexing said index portion to said bucket portion.” Because *Bechtolsheim* does not disclose the particular features of the transmission recited in independent claim 1, *Bechtolsheim* also does not disclose the features of the transmission further defined in claim 2. Accordingly, it is respectfully requested that the rejection of claim 2 be reversed.

iii. Claim 3

Claim 3 depends from and further limits independent claim 1. Accordingly, the arguments from Section VIII(i), above, apply with even greater force to claim 3.

Furthermore, claim 3 recites, “said step of indexing said index portion to said bucket portion is the step of XOR indexing said index portion to said bucket portion.” Because *Bechtolsheim* does not disclose the particular features of the transmission recited in independent claim 1, *Bechtolsheim* also does not disclose

the features of the transmission further defined in claim 3. Accordingly, it is respectfully requested that the rejection of claim 3 be reversed.

iv. Claim 4

Claim 4 depends from and further limits independent claim 1. Accordingly, the arguments from Section VIII(i), above, apply with even greater force to claim 4.

Furthermore, claim 4 recites, “further comprising the step of sorting said bucket portion.” Because *Bechtolsheim* does not disclose the particular features of the transmission recited in independent claim 1, *Bechtolsheim* also does not disclose the features of the transmission further defined in claim 4. Accordingly, it is respectfully requested that the rejection of claim 4 be reversed.

v. Claim 5

Claim 5 depends from and further limits independent claim 1. Accordingly, the arguments from Section VIII(i), above, apply with even greater force to claim 5.

Furthermore, claim 5 recites, “further comprising the step of binary sorting said bucket portion.” Because *Bechtolsheim* does not disclose the particular features of the transmission recited in independent claim 1, *Bechtolsheim* also does not disclose the features of the transmission further defined in claim 5. Accordingly, it is respectfully requested that the rejection of claim 5 be reversed.

vi. Claim 6

Claim 6 depends from and further limits independent claim 1. Accordingly, the arguments from Section VIII(i), above, apply with even greater force to claim 6.

Furthermore, claim 6 recites, “the step of parsing said data packet into an index portion and a corresponding bucket portion further comprises the step of parsing said index portion so that said index portion will recur when other data is parsed into said index portion and said corresponding bucket portion.” Because *Bechtolsheim* does not disclose the particular features of the transmission recited in independent claim 1, *Bechtolsheim* also does not disclose the features of the transmission further defined in claim 6. Accordingly, it is respectfully requested that the rejection of claim 6 be reversed.

vii. Claim 7

Claim 7 depends from and further limits independent claim 1. Accordingly, the arguments from Section VIII(i), above, apply with even greater force to claim 7.

Furthermore, claim 7 recites, “further comprising the step of storing information regarding said data in said address look-up table as address table information when no address table information is available using said bucket portion to access address table information.” Because *Bechtolsheim* does not disclose the particular features of the transmission recited in independent claim 1, *Bechtolsheim* also does not disclose the features of the transmission further

defined in claim 7. Accordingly, it is respectfully requested that the rejection of claim 7 be reversed.

viii. Claim 8

Appellant's independent claim 8, the independent claim from which claims 9-14 depend, recites an address table look-up indexing device. The device includes a receiver portion of a port of a network device that receives an incoming data packet, a data parser that parses said data packet into an index portion and a corresponding bucket portion, an indexer that directly indexes said index portion to said bucket portion, and an address lookup device that accesses an address look-up table using said corresponding bucket portion.

Appellant respectfully submits that independent claim 8 recites features that are neither disclosed nor suggested in *Bechtolsheim*.

Appellant respectfully submits that *Bechtolsheim* fails to disclose or suggest at least the features of the data parser, the indexer, and the address lookup device as recited in claim 8 for the same reasons stated above in Section VIII(i) for claim 1.

Based at least on the above, Appellant respectfully submits that *Bechtolsheim* fails to disclose or suggest all of the features of independent claim 8 because this reference fails to disclose or suggest, at least, the "a data parser that parses said data packet into an index portion and a corresponding bucket

portion, an indexer that directly indexes said index portion to said bucket portion, and an address lookup device that accesses an address look-up table using said corresponding bucket portion,” as recited in independent claim 8.

Accordingly, it is respectfully requested that the rejection of independent claim 8 be reversed.

ix. Claim 9

Claim 9 depends from and further limits independent claim 8. Accordingly, the arguments from Section VIII(viii), above, apply with even greater force to claim 9.

Furthermore, claim 9 recites, “said indexer linearly indexes said index portion to said bucket portion.” Because *Bechtolsheim* does not disclose the particular features of the transmission recited in independent claim 8, *Bechtolsheim* also does not disclose the features of the transmission further defined in claim 9. Accordingly, it is respectfully requested that the rejection of claim 9 be reversed.

x. Claim 10

Claim 10 depends from and further limits independent claim 8. Accordingly, the arguments from Section VIII(viii), above, apply with even greater force to claim 10.

Furthermore, claim 10 recites, “said indexer XOR indexes said index portion to said bucket portion.” Because *Bechtolsheim* does not disclose the particular features of the transmission recited in independent claim 8, *Bechtolsheim* also does not disclose the features of the transmission further defined in claim 10. Accordingly, it is respectfully requested that the rejection of claim 10 be reversed.

xi. Claim 11

Claim 11 depends from and further limits independent claim 1. Accordingly, the arguments from Section VIII(viii), above, apply with even greater force to claim 4.

Furthermore, claim 11 recites, “further comprising a sorter binary sorts said bucket portion.” Because *Bechtolsheim* does not disclose the particular features of the transmission recited in independent claim 8, *Bechtolsheim* also does not disclose the features of the transmission further defined in claim 11. Accordingly, it is respectfully requested that the rejection of claim 11 be reversed.

xii. Claim 12

Claim 12 depends from claim 11, which in turn further limits independent claim 8. Accordingly, the arguments from Section VIII(viii), above, apply with even greater force to claim 12.

Furthermore, claim 12 recites, “said sorter binary sorts said bucket portion.”

Because *Bechtolsheim* does not disclose the particular features of the transmission recited in independent claim 8, *Bechtolsheim* also does not disclose the features of the transmission further defined in claim 12. Accordingly, it is respectfully requested that the rejection of claim 12 be reversed.

xiii. Claim 13

Claim 13 depends from claim 11, which in turn further limits independent claim 8. Accordingly, the arguments from Section VIII(viii), above, apply with even greater force to claim 13.

Furthermore, claim 13 recites, “wherein said data parser parses said index portions into groups such that each said index portion in a group is the same as other index portions in said group.” Because *Bechtolsheim* does not disclose the particular features of the transmission recited in independent claim 8, *Bechtolsheim* also does not disclose the features of the transmission further defined in claim 13. Accordingly, it is respectfully requested that the rejection of claim 13 be reversed.

xiv. Claim 14

Claim 14 depends from and further limits independent claim 8. Accordingly, the arguments from Section VIII(viii), above, apply with even greater force to claim 14.

Furthermore, claim 14 recites, “further comprising a storage mechanism that stores information regarding said data packet in said address look-up table as address table information when no address table information is available using said bucket portion to access address table information.” Because *Bechtolsheim* does not disclose the particular features of the transmission recited in independent claim 8, *Bechtolsheim* also does not disclose the features of the transmission further defined in claim 14. Accordingly, it is respectfully requested that the rejection of claim 14 be reversed.

xv. Claim 15

Appellant’s independent claim 15 recites a network switch that includes multiple ports used for receiving and exporting data, each of said multiple ports being connected to one another through a communications medium, and multiple Address Resolution Logic (ARL) devices, each of said multiple ARL devices being connected to one of said multiple ports, each of said multiple ports having a corresponding ARL device, each of said multiple ARL devices includes a parser that parses data into an index portion and a corresponding bucket portion, an indexer that directly indexes said index portion to a corresponding bucket portion, and a look-up device that accesses table entries in a look-up table using said bucket portion.

Appellant respectfully submits that independent claim 15 recites features

that are neither disclosed nor suggested in *Bechtolsheim*.

Appellant respectfully submits that *Bechtolsheim* fails to disclose or suggest at least the features of the parser, the indexer, and the look-up device as recited in claim 15 for the same reasons stated above in Section VIII(i) for claim 1.

Based at least on the above, Appellant respectfully submits that *Bechtolsheim* fails to disclose or suggest all of the features of independent claim 15 because this reference fails to disclose or suggest, at least, the “a parser that parses data into an index portion and a corresponding bucket portion, an indexer that directly indexes said index portion to a corresponding bucket portion, and a look-up device that accesses table entries in a look-up table using said bucket portion,” as recited in independent claim 15.

Accordingly, it is respectfully requested that the rejection of independent claim 15 be reversed.

IX. CONCLUSION

For all of the above noted reasons, it is respectfully submitted that numerous clear differences exist between the present invention as recited in claims 1-15 and the cited art relied upon by the Examiner. It is further contended that these differences are more than sufficient to establish both novelty and non-obviousness of the present invention.


This final rejection being in error, therefore, it is respectfully requested that this honorable Board of Patent Appeals and Interferences reverse the Examiner's decision in this case and indicate the allowability of application claims 1-15 over the art of record.

In the event that this paper is not being timely filed, Appellant respectfully petitions for an appropriate extension of time.

Any fees for such an extension together with any additional fees which may be due with respect to this paper may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,

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Encls: Appendix 1 - Claims on Appeal
Appendix 2 - Evidence
Appendix 3 - Related Proceedings

APPENDIX 1

CLAIMS ON APPEAL

1. A method of performing a table look-up in a network device comprising the steps of:

receiving a data packet through an input port of the network device;

parsing said data packet into an index portion and a corresponding bucket portion;

indexing, directly, said index portion to said corresponding bucket portion;
and

accessing address table information stored in an address look-up table using said bucket portion.

2. The method as claimed in claim 1 wherein said step of indexing said index portion to said bucket portion is the step of linearly indexing said index portion to said bucket portion.

3. The method as claimed in claim 1 wherein said step of indexing said index portion to said bucket portion is the step of XOR indexing said index portion to said bucket portion.

4. The method as claimed in claim 1 further comprising the step of sorting said bucket portion.

5. The method as claimed in claim 1 further comprising the step of binary sorting said bucket portion.

6. The method as claimed in claim 1 wherein the step of parsing said data packet into an index portion and a corresponding bucket portion further comprises the step of parsing said index portion so that said index portion will recur when other data is parsed into said index portion and said corresponding bucket portion.

7. The method as claimed in claim 1 further comprising the step of storing information regarding said data in said address look-up table as address table information when no address table information is available using said bucket portion to access address table information.

8. An address table look-up indexing device comprising:

- a receiver portion of a port of a network device that receives an incoming data packet;
- a data parser that parses said data packet into an index portion and a corresponding bucket portion;
- an indexer that directly indexes said index portion to said bucket portion; and
- an address lookup device that accesses an address look-up table using said corresponding bucket portion.

9. The device as claimed in claim 8 wherein said indexer linearly indexes said index portion to said bucket portion.

10. The device as claimed in claim 8 wherein said indexer XOR indexes said index portion to said bucket portion.

11. The device as claimed in claim 8 further comprising a sorter that sorts said bucket portion.

12. The device as claimed in claim 11 wherein said sorter binary sorts said bucket portion.

13. The device as claimed in claim 11 wherein said data parser parses said index portions into groups such that each said index portion in a group is the same as other index portions in said group.

14. The device as claimed in claim 8 further comprising a storage mechanism that stores information regarding said data packet in said address look-up table as address table information when no address table information is available using said bucket portion to access address table information.

15. A network switch comprising:
multiple ports used for receiving and exporting data, each of said multiple

ports being connected to one another through a communications medium;

multiple Address Resolution Logic (ARL) devices, each of said multiple ARL devices being connected to one of said multiple ports, each of said multiple ports having a corresponding ARL device, each of said multiple ARL devices comprising:

a parser that parses data into an index portion and a corresponding bucket portion;

an indexer that directly indexes said index portion to a corresponding bucket portion;

a look-up device that accesses table entries in a look-up table using said bucket portion.

APPENDIX 2

EVIDENCE APPENDIX

No evidence under section 37 C.F.R. 1.130, 1.131, or 1.132 has been entered or will be relied upon by Appellants in this appeal.

APPENDIX 3

RELATED PROCEEDINGS APPENDIX

No decisions of the Board or of any court have been identified under 37

C.F.R. §41.37(c)(1)(ii).